RTI Prototype
Release 0.2

Presented to

Architecture Management Group

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Refer to the AMG 7 RTI presentation

- Objectives of the RTI effort
- The Management Team
- Key factors driving the RTI release schedule

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Protofederation support

- Introduction to Release 0.2 will be held tonight
- Available for FTP retrieval — talk to Tom Stark for details <mailto: tstark@msis.dmso.mil>
- RID data format available — required for use with 0.2
- Please use the SAIC Support Group at DMSO
- Please use the RTI help mailing list to discuss issues and implementation details and/or problems
  To use: <mailto:rti_help@msis.dmso.mil> after subscribing via <mailto: listserv@msis.dmso.mil>
- Subscribers to <rti_user@dss.ll.mit.edu> will be automatically subscribed to this new list

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RTI prototype, Release 0.2
Major changes from Release 0.1

- Adds Ownership Management
- Requires an RTI Initialization Data (RID) file at federation creation time
- Adds best effort transportation functions to improve performance and throughput for Update Attribute Value

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Ownership Management Services

Request Attribute Ownership Divestiture	0.2
Unconditional Attribute Ownership Divestiture	0.2
Attribute Ownership Divestiture Notification †	0.2
Request Attribute Ownership Assumption †	0.2
Request Attribute Ownership Acquisition	0.2
Attribute Ownership Acquisition Notification †	0.2
Request Attribute Ownership Release †	0.2
Query Attribute Ownership	0.2
Request Delete Privilege Acquisition	0.2
Request Delete Privilege Release †	0.2
Delete Privilege Notification †	0.2

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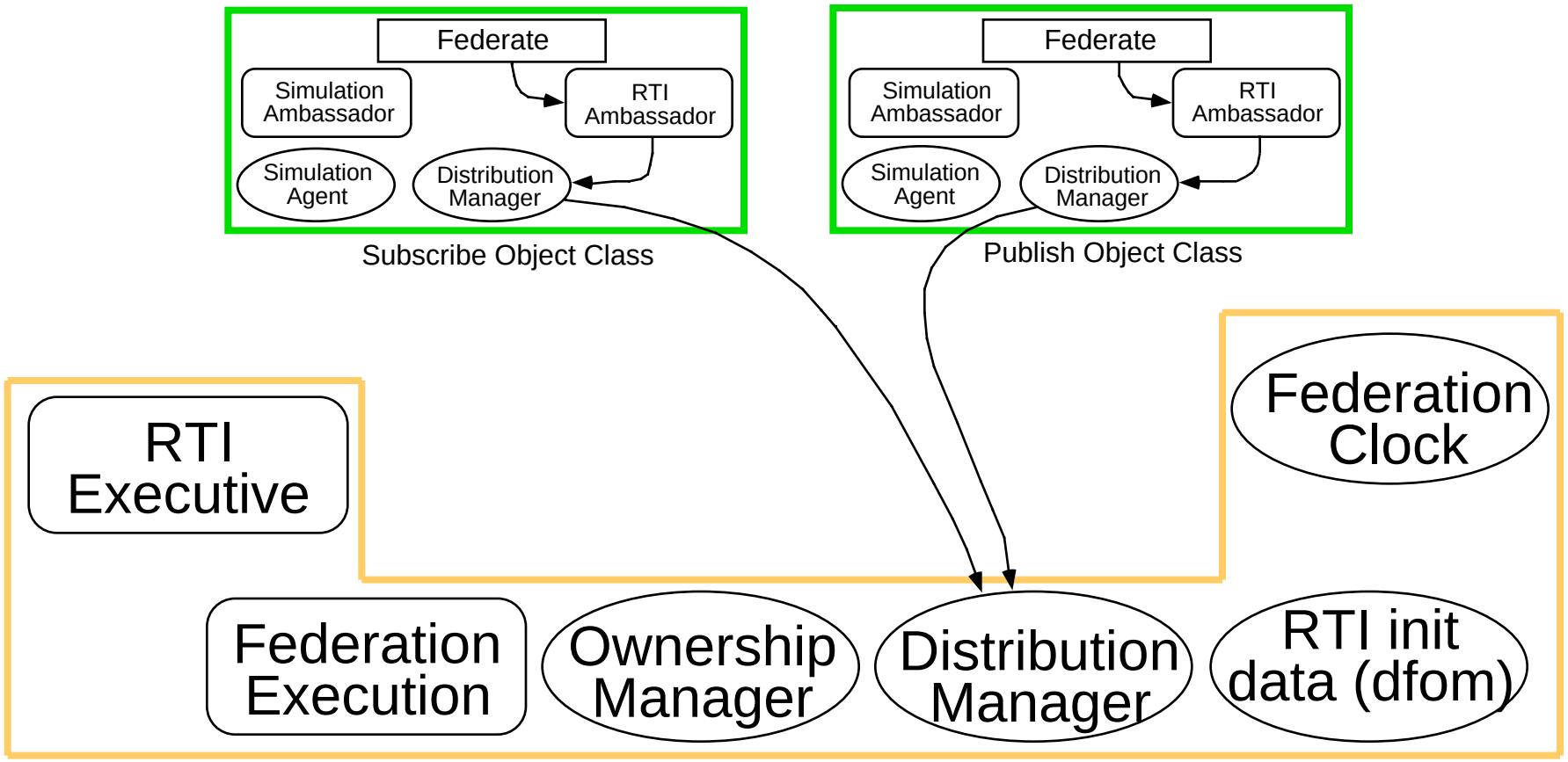
Publish/Subscribe Object Class in Release 0.2



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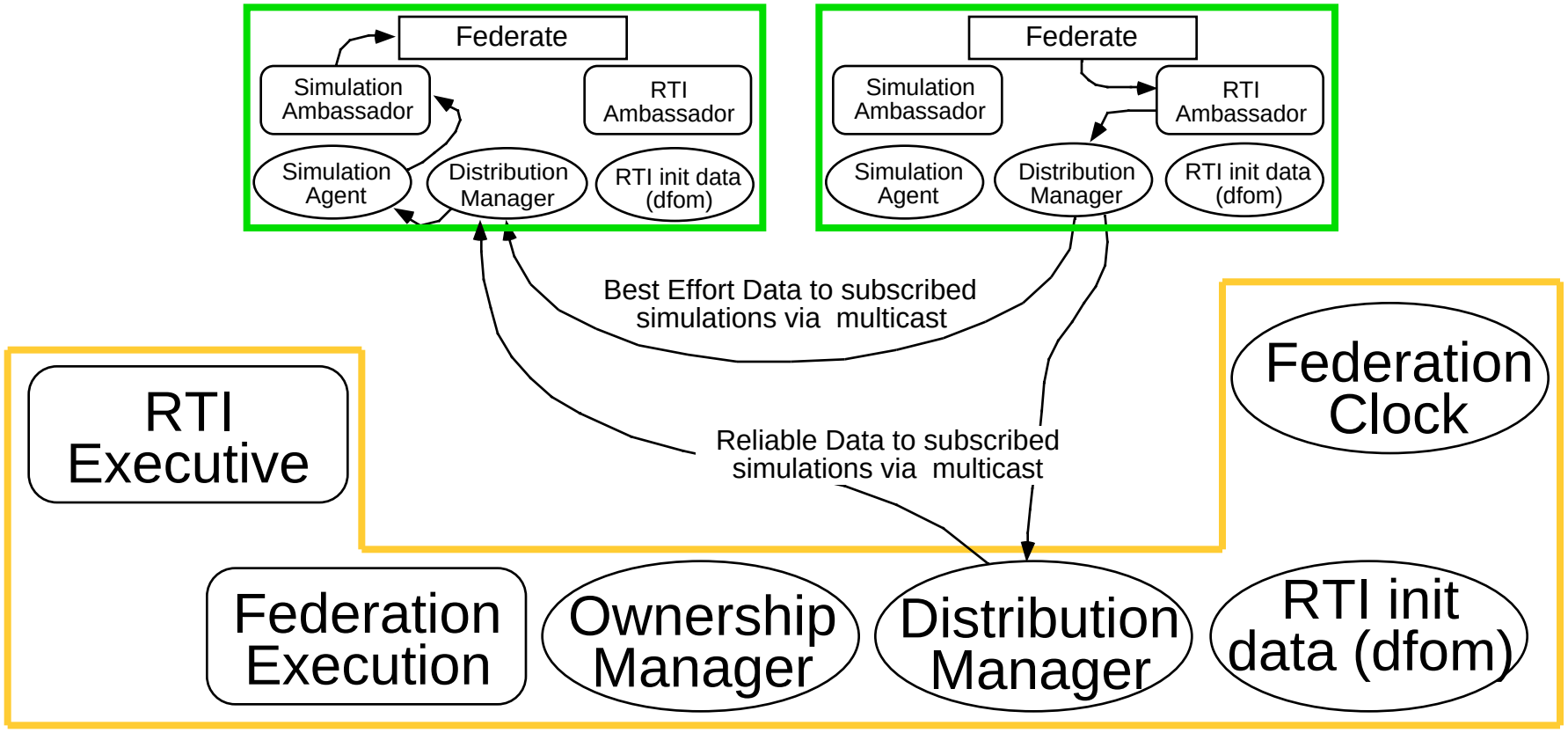
Update Attribute Value in Release 0.2



RTI performance strategy

- Issues
  - Latency
  - Throughput
  - Resources required
  - Scaleability
- Approach
  - Conduct analyses for underlying RTI support functions
  - Select techniques to address all identified requirements
  - Analyze approaches based on existing (recorded) data
  - Analyze data from Protofederation experiments
  - Optimize RTI services as required to meet performance goals

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Some suggestions for FOM designers and implementers

- Consider grouping “attributes” that change together into “complex attributes” (e.g., velocity and position)
- Consider presenting “all” of an object’s changed attributes via a single Update Attribute Value (the RTI will use as few packets as possible to transmit the data)
  - Eventually the RTI *may* be able to re-bundle data from multiple Update Attribute Value calls

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Input needed from protofederations

- What is your programming model?
  - Process/thread structure for your application
- POSIX model vs. platform specific model?

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Details of the 0.2 release

- New manager design
- Transportation and Ordering
- Ownership Management
- Test Federate Improvement
- Time Management in Version 0.3

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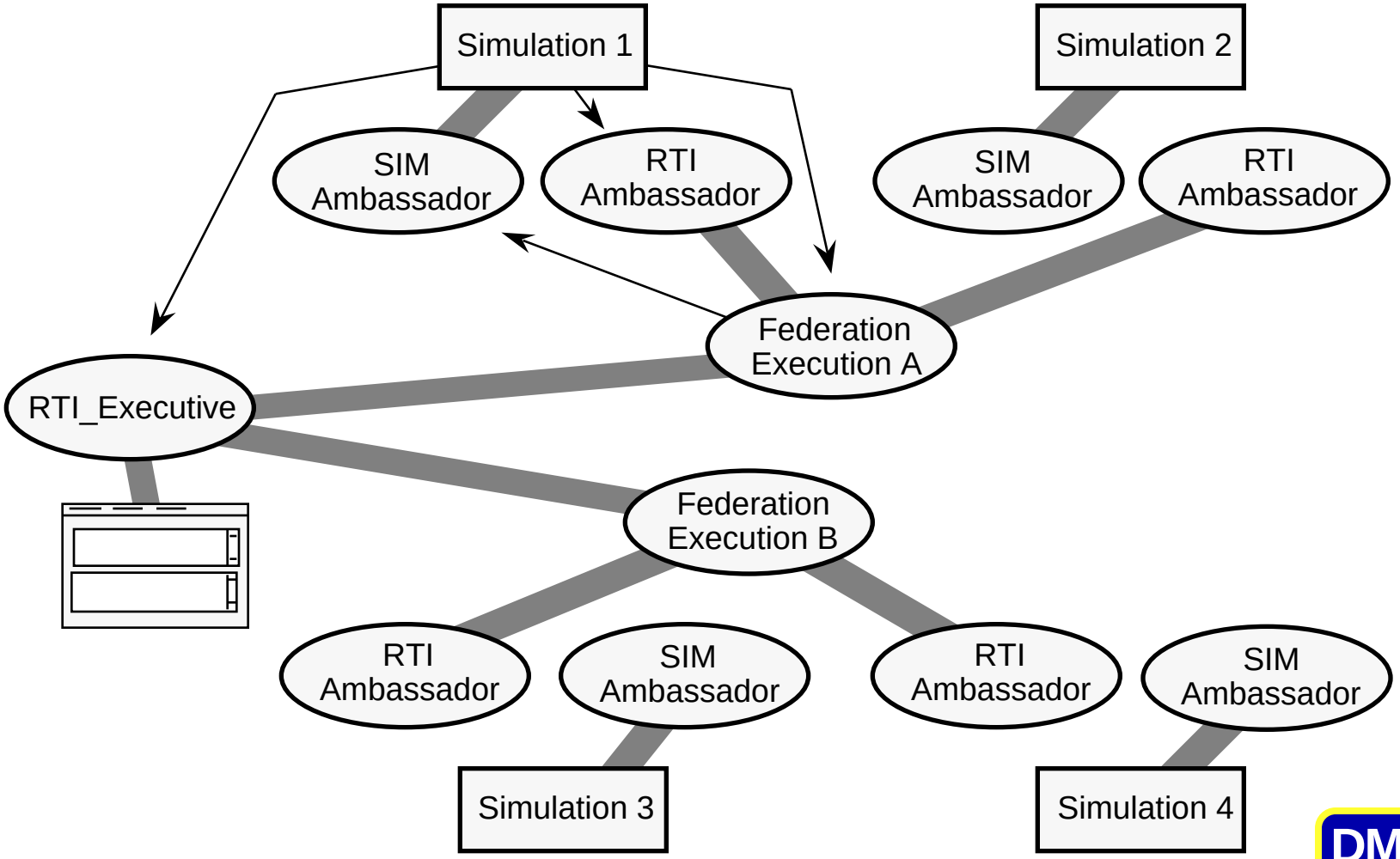
Old RTI Manager Design



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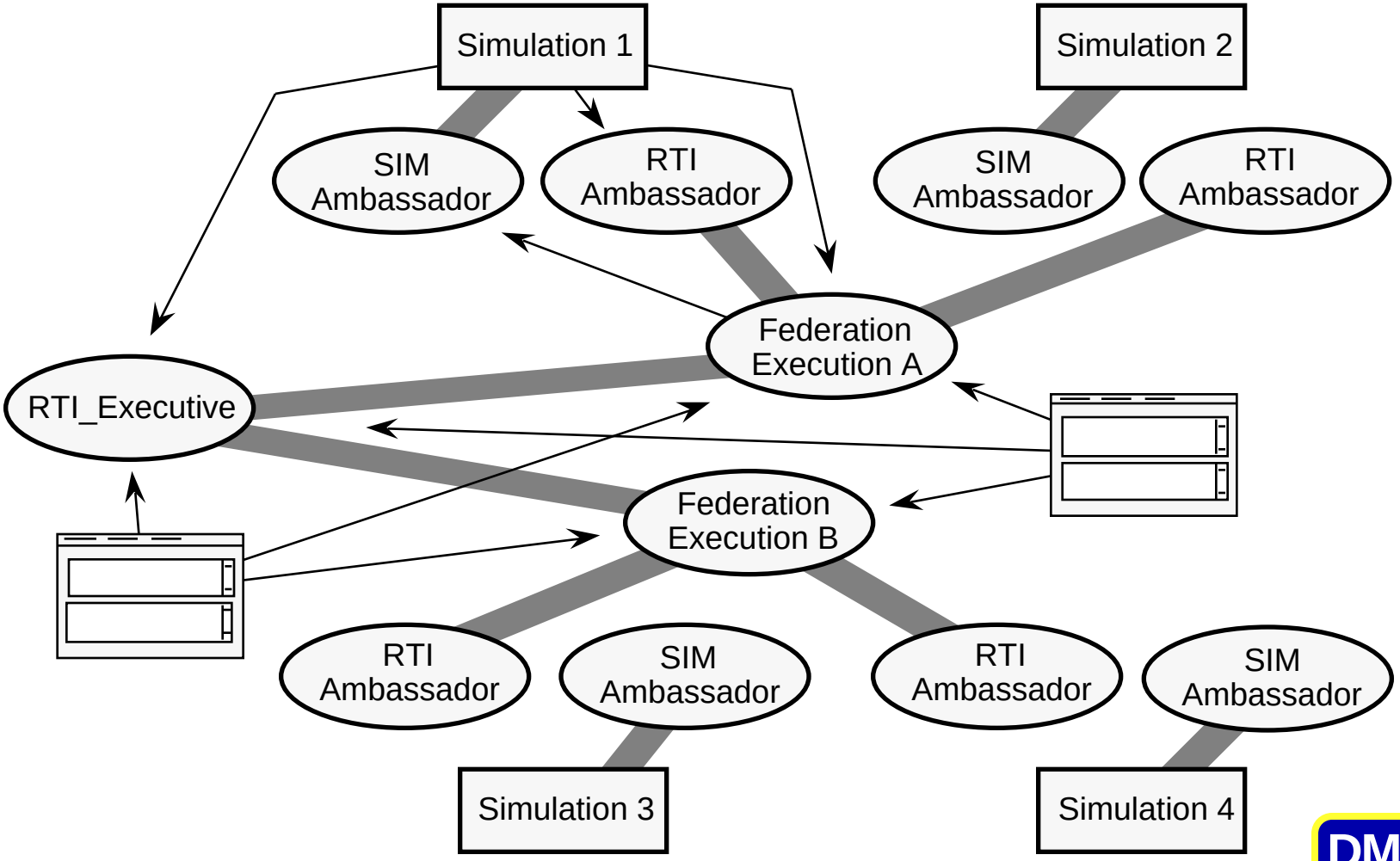
New RTI Manager Design



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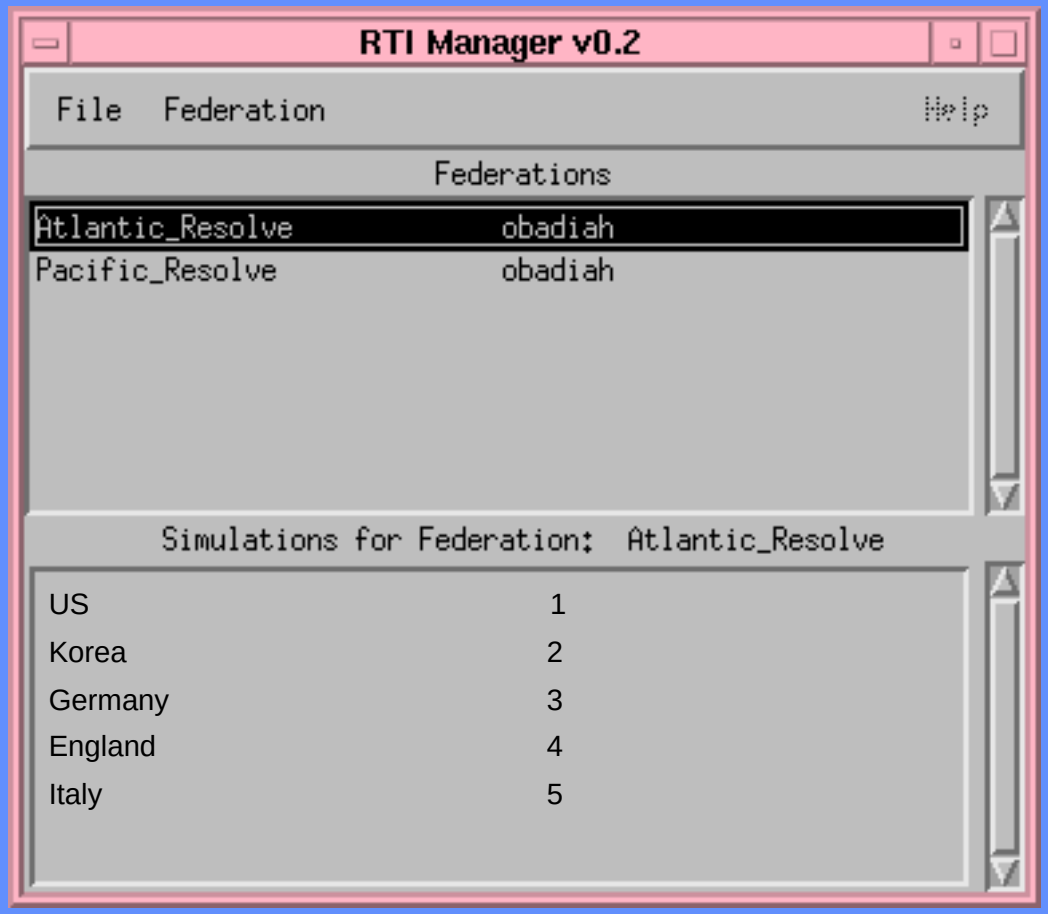
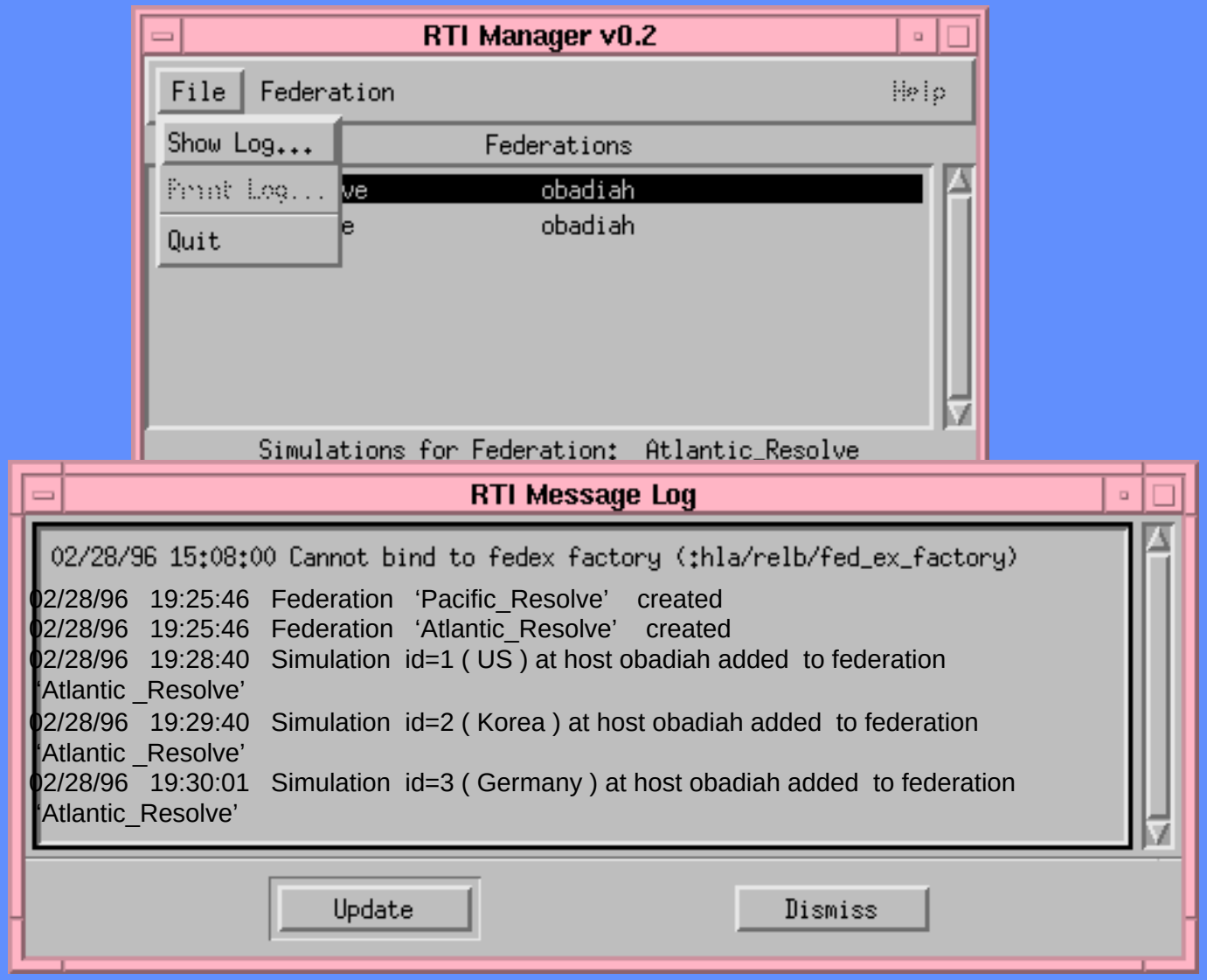
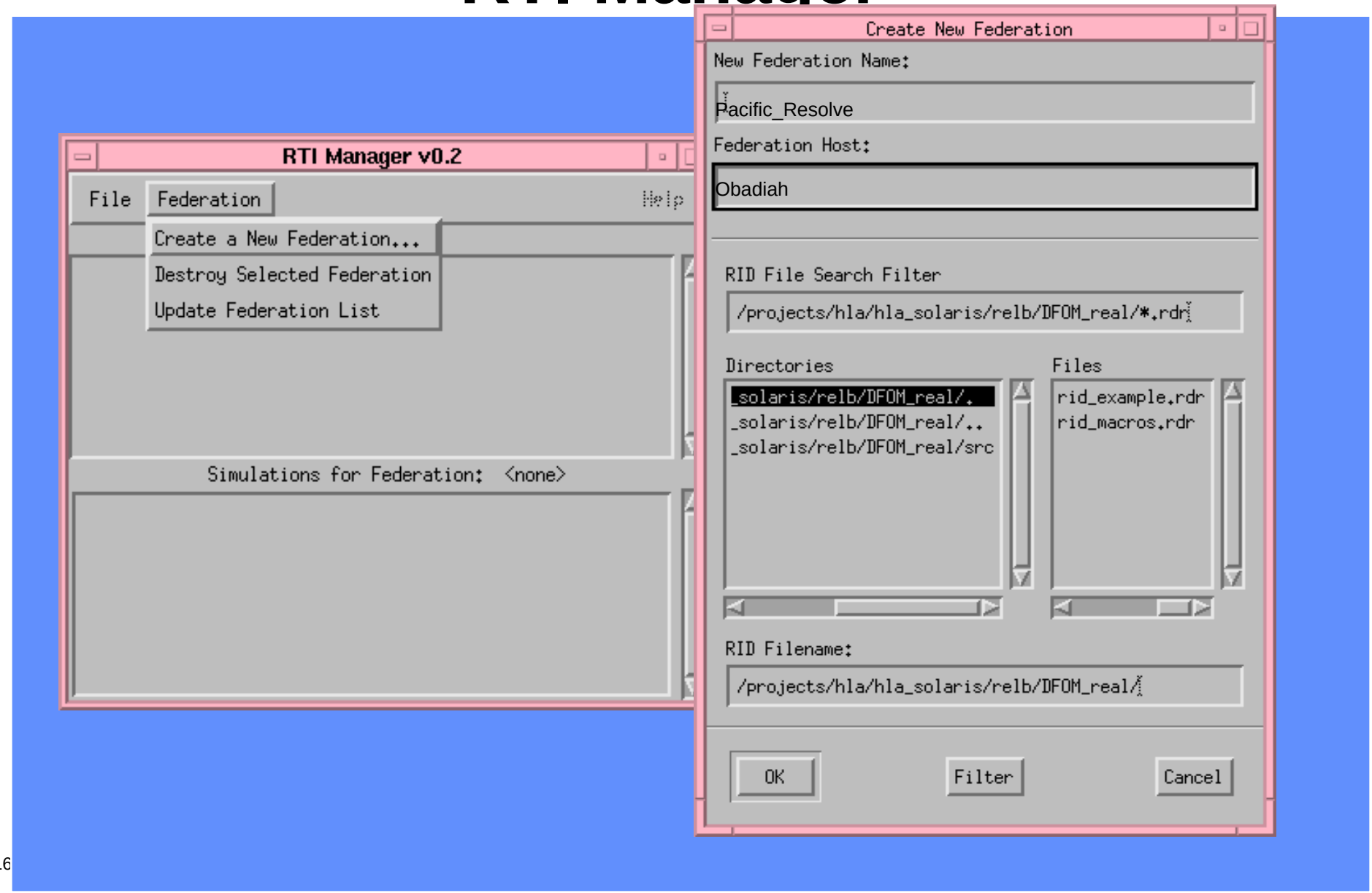
RTI Manager


RTI Manager v0.2
File
Federation
Help
Federations
Atlantic_Resolve obadiah
Pacific_Resolve obadiah
Simulations for Federation: Atlantic_Resolve
US 1
Korea 2
Germany 3
England 4
Italy 5

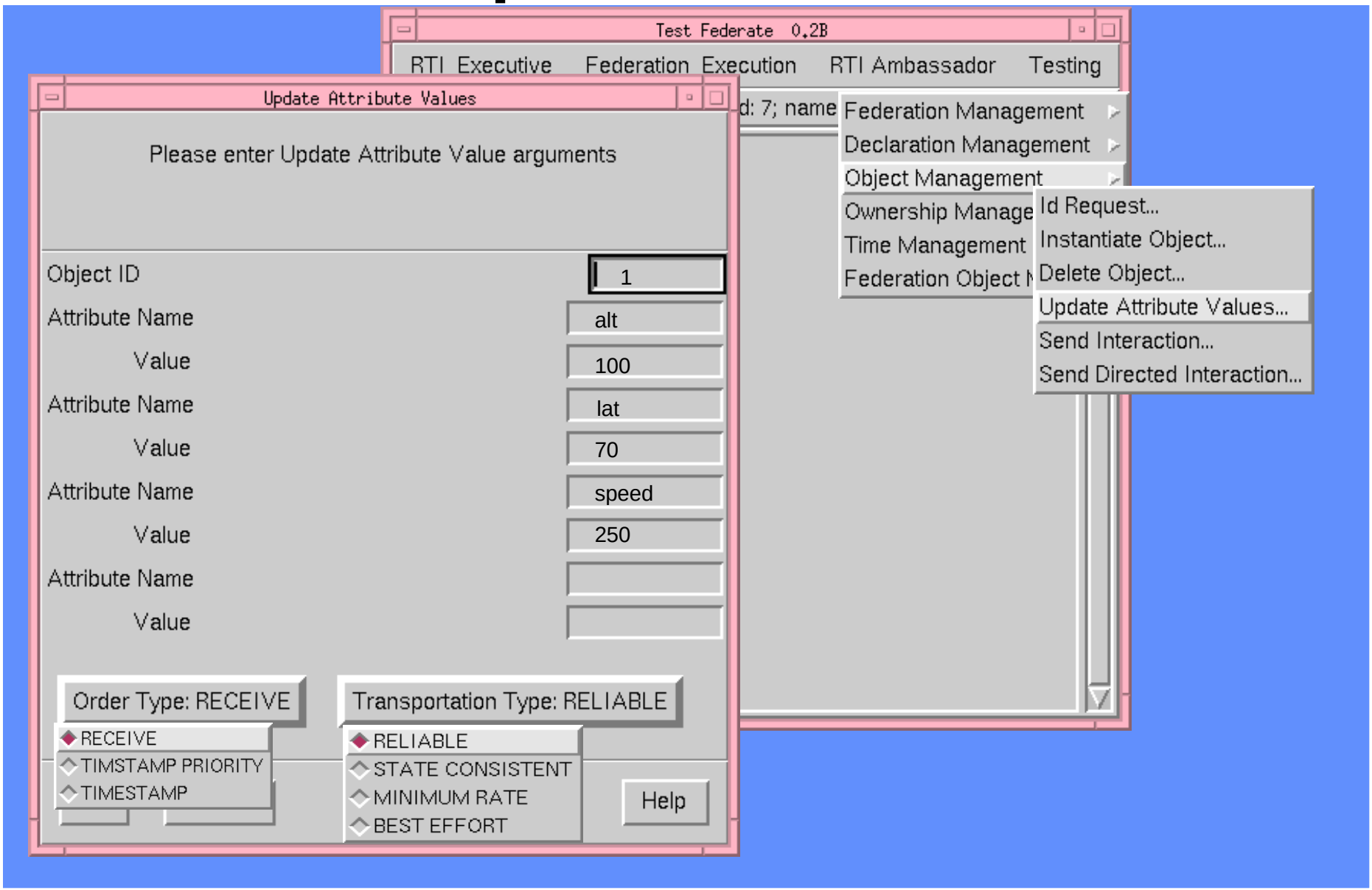
RTI Manager


RTI Manager v0.2
File
Federation
Help
Show Log...
Print Log...
Quit
Federations
obadiah
obadiah
Simulations for Federation: Atlantic_Resolve
RTI Message Log
02/28/96 15:08:00 Cannot bind to fedex factory (:hla/relb/fed_ex_factory)
02/28/96 19:25:46 Federation 'Pacific_Resolve' created
02/28/96 19:25:46 Federation 'Atlantic_Resolve' created
02/28/96 19:28:40 Simulation id=1 (US) at host obadiah added to federation 'Atlantic _Resolve'
02/28/96 19:29:40 Simulation id=2 (Korea) at host obadiah added to federation 'Atlantic _Resolve'
02/28/96 19:30:01 Simulation id=3 (Germany) at host obadiah added to federation 'Atlantic_Resolve'
Update
Dismiss

RTI Manager


RTI Manager v0.2
File
Federation
Help
Create a New Federation...
Destroy Selected Federation
Update Federation List
Simulations for Federation: <none>
Create New Federation
New Federation Name:
Pacific_Resolve
Federation Host:
Obadiah
RID File Search Filter
/projects/hla/hla_solaris/relb/DFOM_real/*.rdr
Directories
Files
_solaris/relb/DFOM_real/.
_solaris/relb/DFOM_real/..
_solaris/relb/DFOM_real/src
rid_example.rdr
rid_macros.rdr
RID Filename:
/projects/hla/hla_solaris/relb/DFOM_real/
OK
Filter
Cancel

Transportation and Ordering Specification



Ownership Management

- Coordinates the distributed simulation of a given object
- HLA object modeling is controlled at the attribute level
- Symmetric transfer regimes
  - Request control from a federate (acquisition)
  - Give control to a federate (divestiture)
- The privilege to delete an object is arbitrated by the RTI

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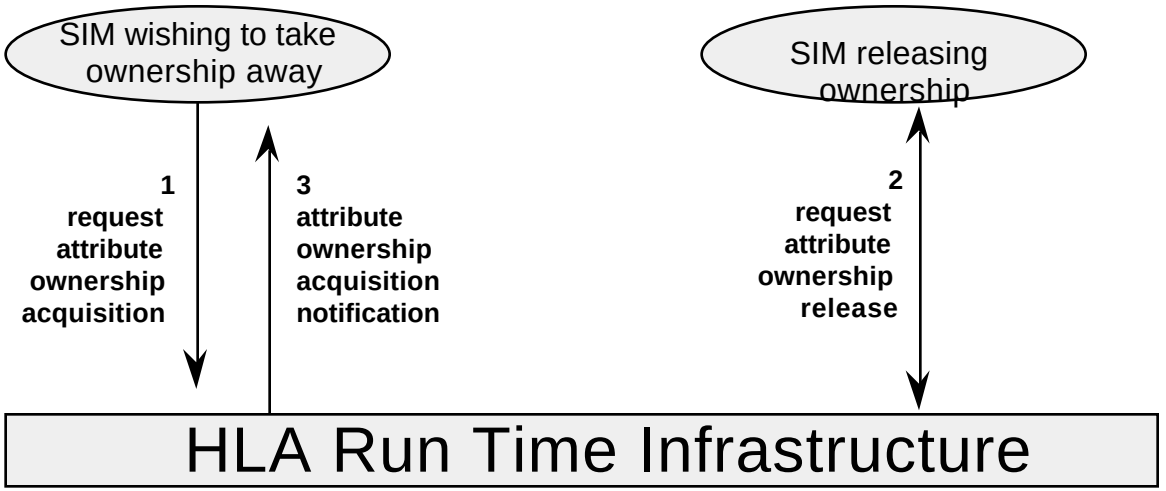
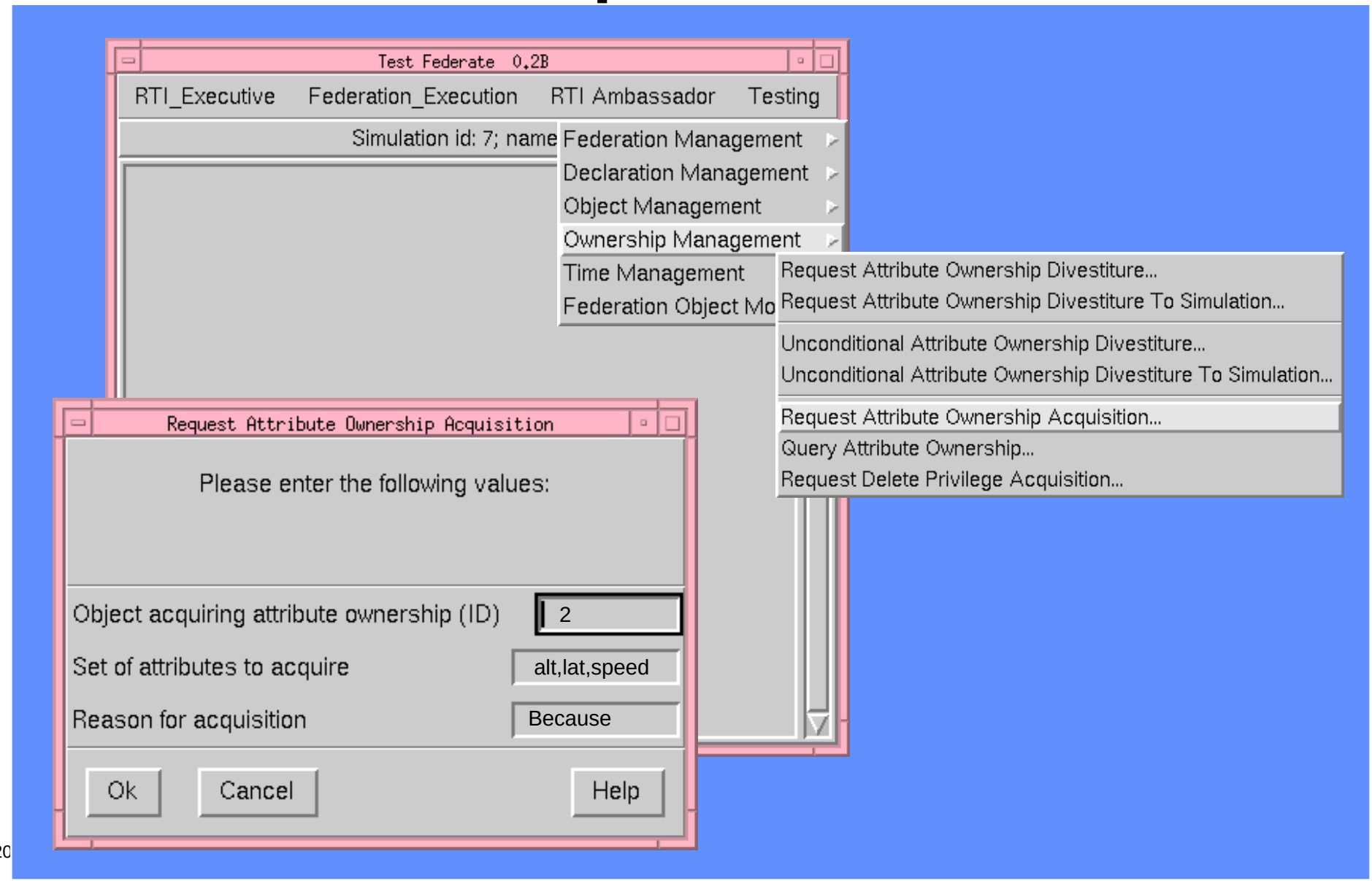
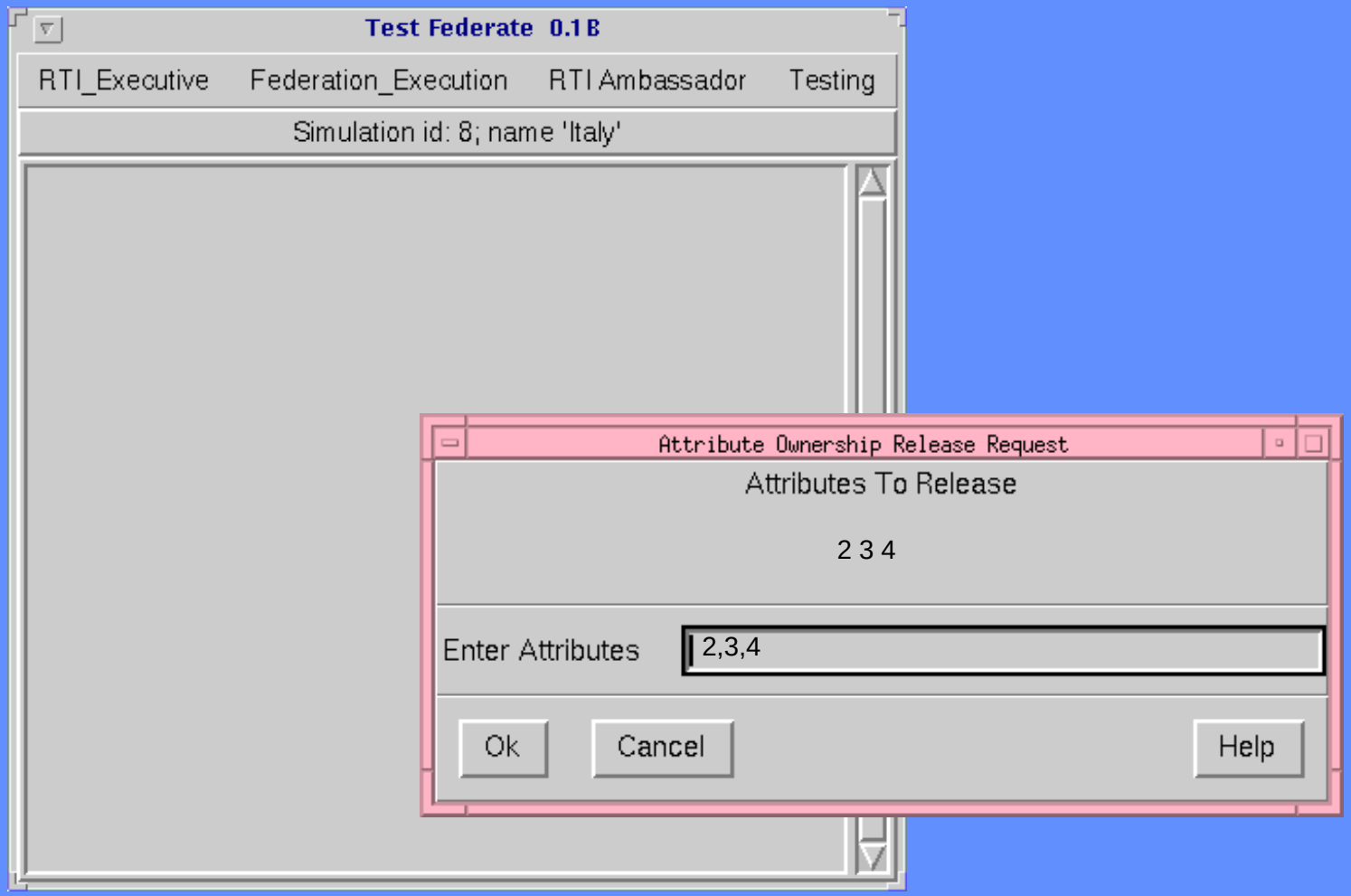
Requesting Attribute Ownership



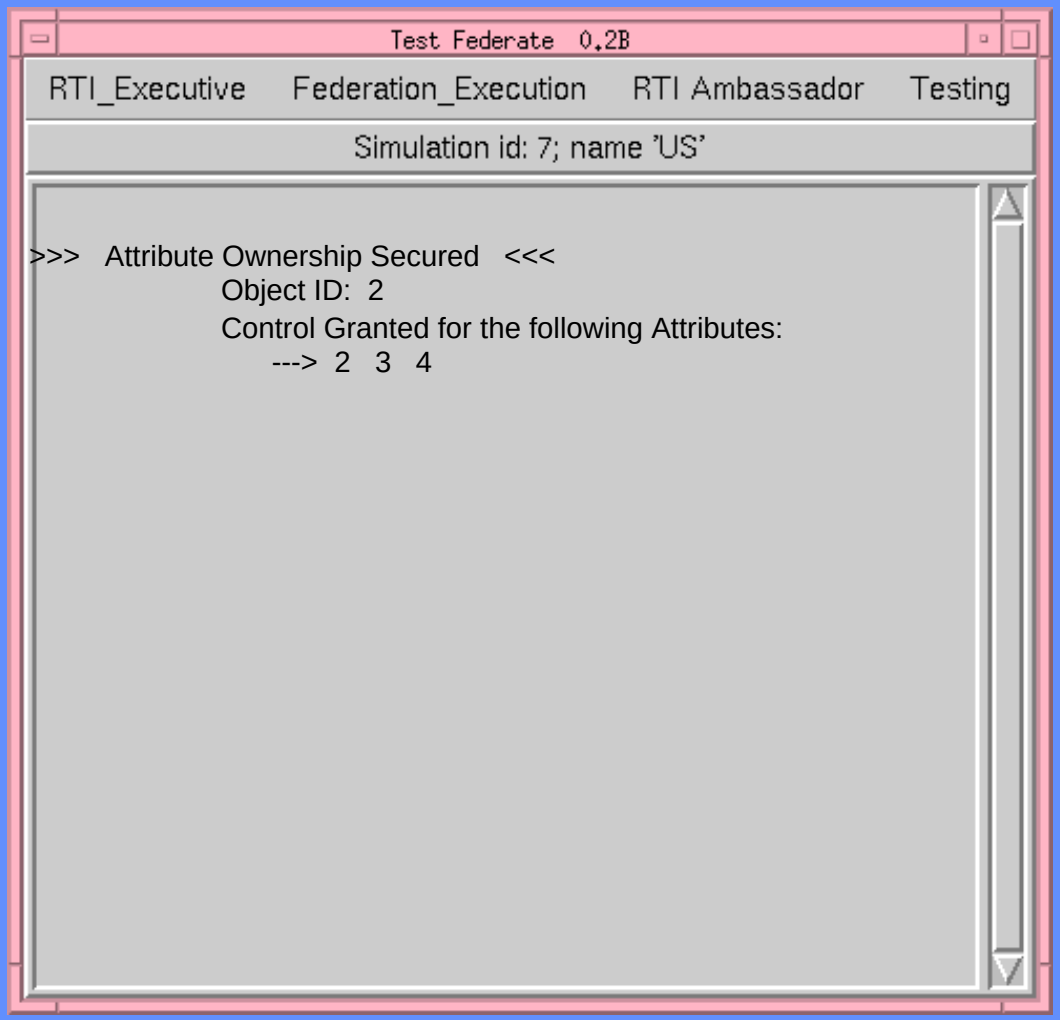
Ownership Control Acquisition



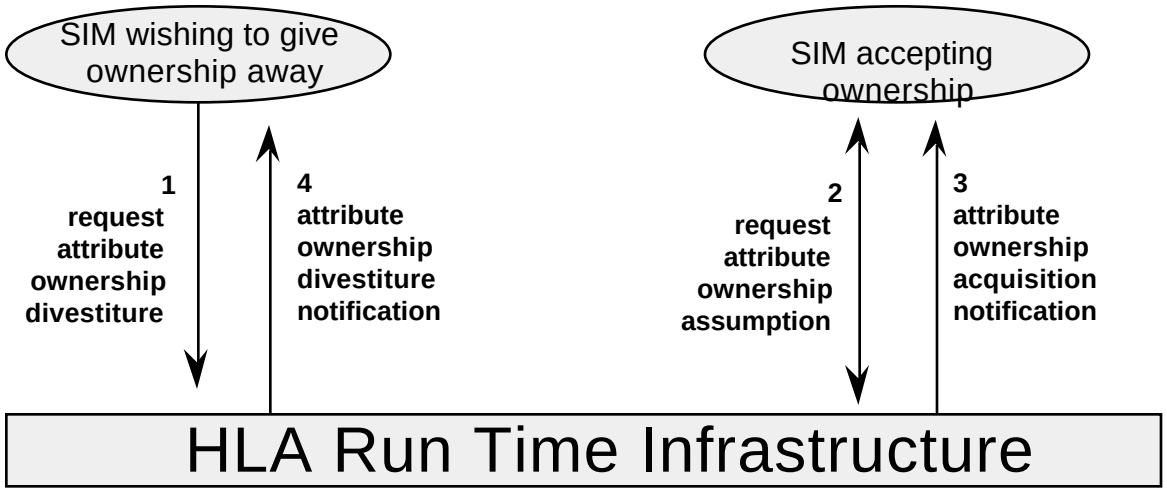
Ownership Control Acquisition



Ownership Control Acquisition



Divesting Attribute Ownership



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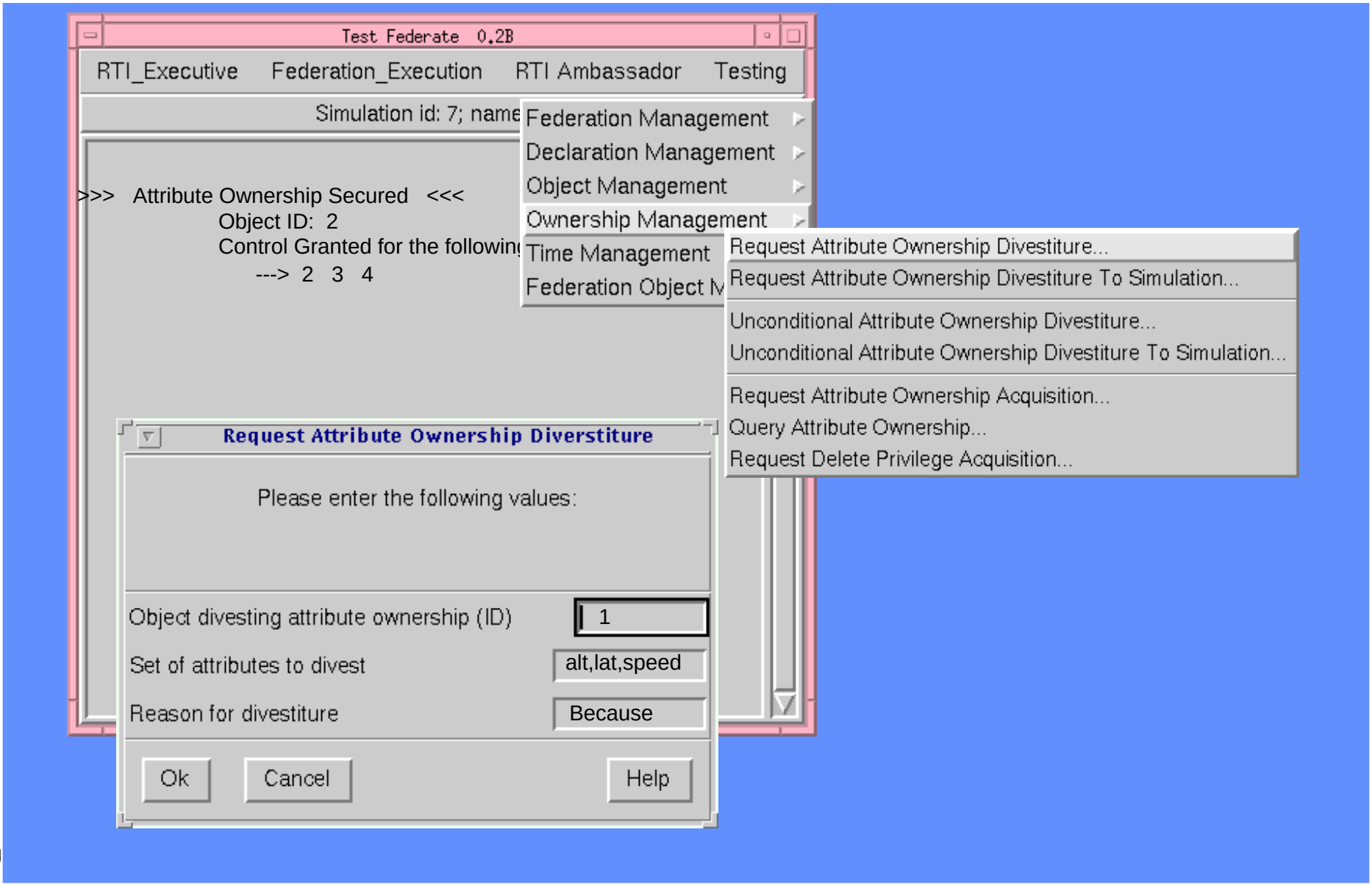
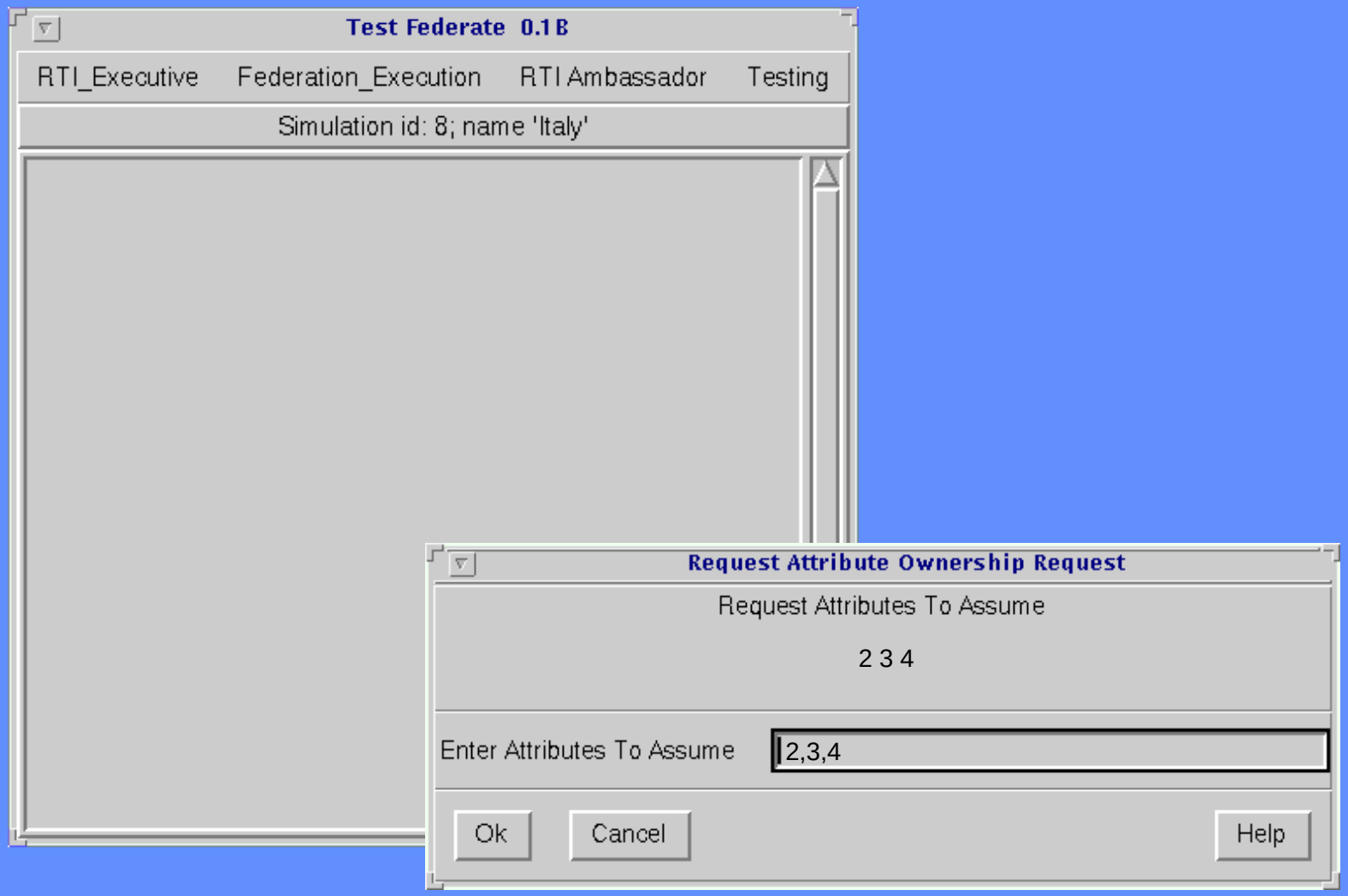
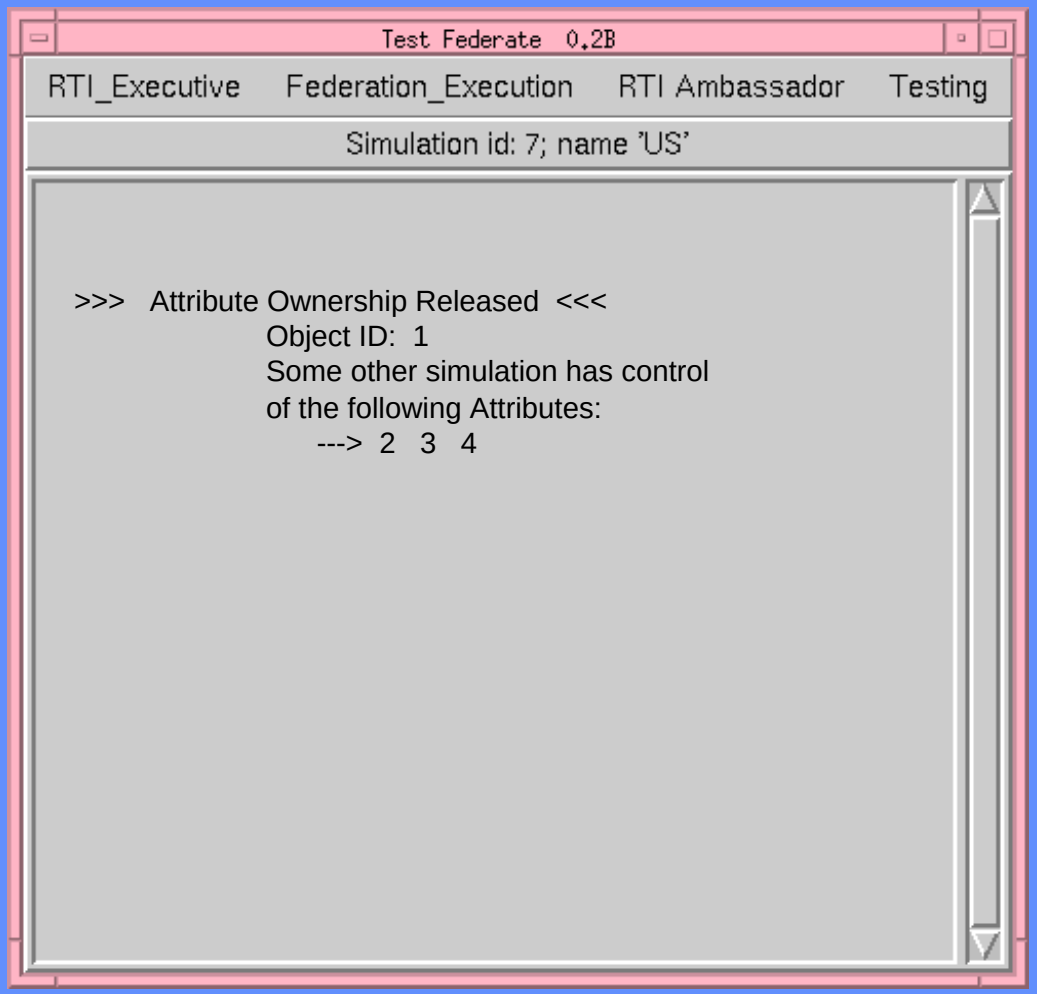
Ownership Control Divestiture



Ownership Control Divestiture



Ownership Control Divestiture



Looking Forward to Version 0.3 Time Management

- Time management deals with the coordination of individual simulations within a federation
- The degree of required coordination depends on the purpose of the federation
- Time management is directly related to message ordering services
- The RTI specification provides a range message ordering services
  - Receive
  - Priority
  - Causal
  - Timestamp
- Version 0.2 will support Receive and Timestamp

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